

SAFETY SHEILD WINDOW INSERT

BACKGROUND OF THE INVENTION

The present invention is directed to the field of motor vehicle safety equipment. More particularly, the present invention is directed to a transparent, bulletproof window insert that may be inserted and retained within an opening of a motor vehicle window.

With respect to the first aspect of the invention, there has been increasing concern about violence, car jacking, and generally, the threat of firearms against people in motor vehicles. Vehicular occupants are particularly vulnerable to bodily injury or attack as a result of the relative ease of access to the occupant of a vehicle via the glass window of the door. Glass windows may easily be broken and provide little, if any, resistance to assault with a gun. This device provides a solution for the long felt need of an easy-to-use, low cost form of protection against these assaults.

Currently, the only alternative for increasing the safety of a vehicle occupant is to have the motor vehicle bulletproofed by a professional service. This is an extremely expensive method requiring extensive modifications to the vehicle and costing tens of thousands of dollars. There are currently many materials and ways of achieving a bulletproof vehicle in the non-glass areas. However, the glass areas have few options for bulletproofing, principally, thick glass, glass/plastic laminates. These options are currently installed in two general methods. One method is by splitting the vehicle's door and adding space to accommodate the thicker glass plus increasing the capacity of the electric motors required to raise and lower the heavier glass. This is extremely expensive. The other method is laminating the extra thickness to the vehicle's window and not modifying the door. This leaves the vehicle's window in a permanently closed position. Any of these options are out of the financial range of the common person. Even law enforcement, which desperately needs protection, cannot afford it. This proposed device is unique in that any adult can install or remove it in seconds without any modifications to the

vehicle. It allows the use of the window, and is affordable. It can be instantly used on different vehicles of the same model, which is a great asset in law enforcement as a vehicle can become inoperative.

With respect to the second aspect of the present invention, there are few, if any, devices available to restrain a child or family pet, such as a dog or cat, from exiting through an open window, other than a cage or container. For the safety and comfort of the child or pet, it is clearly beneficial to allow a constant flow of fresh air into the vehicle. Currently, the only choice for parents, or pet owners, who wish to bring safety and comfort to their children and or pets; not confining them physically, or have concern about the amount of air flow, is to limit how far down the window is retracted; thus preventing the child or pet from exiting the window. Automobile manufacturers are increasingly incorporating safety features into the design of automobiles, however, with respect to the windows on the automobile, the industry standard remains to simply use a glass window retracting into the door frame, additionally, sometimes limiting the distance of retraction. One safety feature that has been incorporated has been the use of a locking device activated by the driver which can be used to prevent passenger windows from being opened. This second aspect of the device is intended for limiting the ability of small children to open a passenger door window.

There were prior devices associated with vehicle and occupant protection. However, they were unable to address the very difficult problem of year-round use in all types of weather, ease-of-use, and not require modifications to the vehicle. This device is unique in solving all these problems. It takes a leap and utilizes the previously unseen advantage presented by the relationship of the motor vehicle window to its weather stripping to provide insert support, not require vehicle modification and retain the vehicle's original window weatherproofing.

Cameron (US Patent No. 5,570,542) taught a window insert that replaced, and was retained by, the vehicle's window. The window insert was fitted into the upper channel of the window frame

and was retained in its place by the original window fitting into a groove running along the bottom of the insert.

The window insert, because it was retained by the vehicle's window, was of limited use. The window could not be rolled up when the insert was in place. Therefore, driver was compelled to stop and remove the insert during inclement weather, or when it was desirable to reduce the flow of air through the insert. The bulletproof aspect of the window was more difficult to use as the insert needed extensive and complicated weather proofing to be used in any inclement weather.

Another system is taught by Carson (US Patent No. 5,242,207). Carson's taught a vandal protective plastic sheet that required four mounting brackets to be fastened with screws to the vehicle's window frame. This approach permanently modified and marred the vehicle's door and made quick installation or removal impossible.

Accordingly, it would be essential for year round use to have an alternative window insert that allows the car's windows to be rolled up and down while the insert remains in place.

SUMMARY OF THE INVENTION

The invention is directed to an insert formed from a clear or translucent material and a single mounting bracket, adapted to be inset into the window opening of a conventional motor vehicles. It can be installed quickly and without any modifications to the vehicle.

With the first aspect of the invention the window insert is formed from a high impact resistant transparent material. The window insert can be easily installed into the window frame. The high impact material forming the window insert is a "bullet proof" material, such as a glass composite, glass-plastic composite or all plastic. The thickness of the material can vary according to the level of protection desired.

In the second aspect of the invention the window insert is intended for use by parents and pet owners, and includes a plurality of openings allowing venting of air for the benefit of children and pets, yet having the openings proportioned to prevent the child or pet from exiting the vehicle via the window. The material forming the window insert is preferably a plastic, such as a polycarbonate, or acrylic material.

For either of the two alternative aspects of the invention the window insert includes a mounting bracket which slips between and resides between the window and its lower inside weather-stripping. The window insert has an upper protruding edge, either integral, or separately attached, that is inserted into and shares with the window, the upper channel of the window frame. The window insert attaches to the mounting bracket with fasteners. The window insert sits on the inside of the window. At this point the window insert is fully installed and the window can be raised or lowered. The automobile can be driven with the insert in place, whether the window is rolled up or down. The mounting bracket can have different size offsets to allow for different thicknesses of the bulletproof window inserts, allowing various levels of protection. The offset also allows for airflow between the window insert and the window, and prevents fogging. No attachments or modification of any kind need to be made to the door, car windows, or window frames.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the window insert according to the second aspect of the present invention;

FIG. 2 is a perspective view of another embodiment of the window insert according to the first aspect of the present invention;

FIG. 3 is a perspective of an alternate embodiment of the window insert;

FIG. 4 is an alternative design for the orifices of the window insert;

FIG. 5 is a perspective view of the window insert according to the first aspect of the present invention;

FIG.6 is a perspective view of an alternative embodiment of the window insert according to the first aspect of the present invention;

FIG.7 is a section view illustrating the installation of the window insert;

FIG. 8 is a perspective view of an installed window insert from the outside of the automobile.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 depicts a window insert **20** according to a second aspect of the invention. The mounting bracket **21** has a bottom blade **22** sized to be insertable between a standard window **23** of an automobile and the lower inside weatherstripping **24** of the window **23**. The mounting bracket **21** has a plane **25** upon which the window insert **20** rests. The mounting bracket **21** also has two fastening devices **26** which retain the window insert **20** having two fastening device receivers **27**.

The window insert **20** has an upper protruding edge **28** sized to be insertable, along with the window **20**, into the upper receiving channel **29** of the window frame of the automobile door. The insert has a notched bottom **30** to rest upon the mounting bracket plane **25** and two fastening device receivers **27** to retain the window insert **20** in the window frame of the automobile door.

Accordingly, it may be appreciated that to install the window insert **20** of the present invention, the window **23** is retracted, the bottom blade **22** of the mounting bracket **21** is inserted between the window **23** and the lower inside weatherstripping **24**. The upper protruding edge **28**

of the window insert 20 is inserted into the upper receiving channel 29 of the window frame, and the window insert's notched bottom 30 is rested on the mounting bracket plane 25. The window insert 20 is then retained in place by engaging the mounting bracket fastening device 26 with the window insert fastening device receiver 27. At this point, the window 23 may be raised or lowered as desired. It also may be appreciated that at no place has the window, window frame, or automobile door been modified or attached to.

Similarly, **FIG 2** depicts another embodiment of the window insert 20 according to the second aspect of the invention. The window insert 20 has a bottom blade 31 which is sized to be insertable between a standard window 23 of an automobile and the lower inside weatherstripping 24 of the window 23. The top of the window insert 20 has a receiving edge 32 and fastening devices 33.

The top mounting bracket 34 has a protruding edge 35 sized to be insertable along with the window 23 into the upper receiving channel 29 of the window frame. The top mounting bracket 34 also has fastening device receivers 36.

Accordingly, it may be appreciated that to install this embodiment of the window insert 20 of the present invention, the window 23 is retracted. The bottom blade 31 of the window insert 20 is inserted between the window 23 and the lower inside weatherstripping 24. The top mounting bracket 34 is inserted into the upper receiving channel 29 of the window frame and is rested on the receiving edge 32 of the window insert 20. The window insert 20 is retained in the window frame by engaging the window insert fastening device 33 and the tip mounting bracket fastening device receivers 36. At this point the window 23 may be raised or lowered as desired and no modification have been made to the car window, window frame, or automobile.

In the second aspect of the present invention, wherein the window insert is used primarily to retain children or pets, it is preferred to include at least one and potentially a plurality of holes or orifices 37, within the window insert 20 so that airflow can be facilitated. In the most basic embodiment of the invention, the orifices 37 may be simply circular openings cut perpendicular to the plane faces of the window insert, as shown in **FIG 1**.

FIG 3 is a perspective view of another alternative embodiment for a window insert 38 , and **FIG 4** shows an enlarged perspective view identified by circle 4 — 4 in **FIG 3** . In the design according to **FIGS 3 and 4** , the window insert 38 is formed to define a stepped pocket 39 to accept the top mounting bracket, and a blade 40 at the lower edge to be insertable between the window and the lower inside weatherstripping. In addition the window insert 38 may include orifices 41 having a circumferential ridge 42 , which defines and further strengthens the window insert 38 . The design of **FIGS 3 and 4** is particularly well suited to manufacture using a vacuum molding technique.

Moreover, for a first aspect of the invention, wherein the window insert is to be used primarily as a high impact resistant bullet proof shield, the window insert would be devoid of orifices as they are illustrated in **FIG 5** . For these applications, the window insert may be manufactured of laminated layers 43 from plastics such as polycarbonate or acrylic or plastic laminates, or glass, or glass-plastic composites.

FIG 5 illustrates the mounting bracket variation for the bullet proof window insert application. The mounting bracket 44 has an offset mounting plane 45 to accept varying thicknesses of the bullet proof window inserts 46, which provide different levels of protection. The offset mounting plane 45 also enhances air flow around the window insert 46 ,thereby preventing fogging in certain inclement weather conditions.

Ergonomically and aesthetically, it is desirable to have a curved window insert 46 which accommodates the natural contour of the curved glass window of most standard vehicles as **FIG 5** illustrates. However, it maybe less expensive to fabricate window inserts from a flat sheet of glass composite or glass-plastic composite.

FIG 5 also illustrates one method of forming or manufacturing the window inserts of the present invention. As it may be appreciated, window shapes and sizes vary so greatly from

automobile to automobile that the window inserts will be manufactured or formed to provide a custom fit in most applications.

FIG 6 illustrates another alternative window insert embodiment where as the protruding edge 48 of the window insert 47 is fabricated from a separate material, such as a plastic or a metal, such as aluminum, or steel, is attached to the window insert in some manner, such as a fastener or adhesive. This may provide added strength to the window insert, provide solutions for an unusual application, or aid in manufacturing.

FIG 7 illustrates the installation process of one embodiment of the window insert. The mounting bracket blade 49 is inserted between the window 50 and the lower inside weatherstripping 51 of the window 50. The upper protruding edge 52 of the window insert 54 is inserted into the upper window channel 53. The window insert 54 is rested on the mounting bracket plane 55 and then retained in place by the fastening system 56. At this point, the window 50 may be raised and occupy the upper window channel 53 with the upper protruding edge 52 of the window insert 54.

FIG 8 illustrates the window insert in place as viewed from the outside of the automobile door.

It should be evident from the foregoing description that the present invention provides many advantages over the prior art, for parents, pet owners, and vehicle occupants who wish to increase the security of a vehicle. Although preferred embodiments are specifically illustrated herein, it will be appreciated to those skilled in the art that many modifications and variations of the present invention are possible. It is therefore preferred that the present invention be limited only by the proper literal and equivalent scope of the appended claims.

What is claimed is: